

TAKING CARE OF DIABETES

**A Guide For Instructors
in a
Patient Education Program**

**U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
Bureau of State Services
Division of Special Health Services
Chronic Disease Program**

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Public Health Service Publication No. 582
Revised 1958

UNITED STATES GOVERNMENT PRINTING OFFICE
WASHINGTON: 1958

FOREWORD

To serve the needs of the many who are teaching persons with diabetes and are developing educational programs for them, the Chronic Disease Program, Public Health Service, offers this guide.

This is a slightly revised edition of the original guide which was part of the kit, "Taking Care of Diabetes," prepared by the American Diabetes Association, Inc., The American Dietetic Association, and the Public Health Service in 1950. The revisions bring the material up-to-date in relation to the scientific advances in the field. The guide may be used with the 11 filmstrips and records, recently re-released, or it may be used alone as a resource in developing classes for diabetic patients or in individual teaching situations.

CONTENTS

	Page
I. General Information	1
II. Organizing, Conducting, and Evaluating Classes	
The Objectives of Instruction.	3
Preparing for the Classes	4
Conducting the Classes	4
Evaluating the Success of the Classes.	6
III. Discussion Guides	
Part 1. What is Diabetes?.	8
Part 2. Eating for Good Health	11
Part 3. Insulin and Its Use	13
Part 4. Planning Good Meals	16
Part 5. Insulin Reaction	17
Part 6. Buying Good Food	20
Part 7. Tests in Diabetes	23
Part 8. Cooking Good Meals	27
Part 9. Diabetic Coma	29
Part 10. Care of the Feet	32
Part 11. Selecting Meals for All Occasions	36
IV. References	38

SECTION I

GENERAL INFORMATION

The filmstrips in the series "Taking Care of Diabetes" and this manual combine the newer teaching approaches of audiovisual aids and group methods of instruction. In addition to teaching diabetic patients and members of their families, these filmstrips can also be used for medical, nursing, and nutrition students or for other professional groups interested in the care of the diabetic patient.

Each of the 11 filmstrips consists of a series of related art frames in color printed on 35-mm. film. Each filmstrip is designed for patient education and deals with medical, nursing, or nutritional aspects of diabetes. The titles of the filmstrips are as follows:

Part	TITLE
1	What is Diabetes
2	Eating for Good Health
3	Insulin and Its Use
4	Planning Good Meals
5	Insulin Reaction
6	Buying Good Food
7	Tests in Diabetes
8	Cooking Good Meals
9	Diabetic Coma
10	Care of The Feet
11	Selecting Meals for All Occasions

The filmstrips are designed to supplement one another, although each unit is complete in itself. If the films are used in the order suggested, one filmstrip provides basic information which enables a person to better understand the next film. By using all of the films the whole field of diabetes may be completely covered.

For each filmstrip there is a 16-inch standard record which must be played at 33 $\frac{1}{3}$ RPM. The running time of each record is approximately 10 minutes.

The Meal Planning Booklet referred to in the filmstrips provides a simple, practical guide for planning meals based on the use of food exchange lists. Included for the physician's use are nine sample meal plans and a

diabetic diet card. The sample meal plans are prepared at different caloric levels. The diabetic diet card summarizes the figures for food values and food exchange lists. The material is available:

A. Loan

The filmstrips are available for review and for short-term loan by hospitals, health agencies, medical groups, or any related organization. Requests for the loan of the materials should be addressed to:

*Communicable Disease Center
U. S. Public Health Service
Atlanta, Georgia
Attention: Film Library*

or

*Regional Office
U. S. Department of Health, Education, and Welfare
Public Health Service
Located at New York, Charlottesville, Atlanta,
Chicago, Kansas City, Dallas, Denver, or
San Francisco.*

B. Purchase

All requests concerning purchase should be forwarded to:

*United World Films
1445 Park Avenue
New York, New York*

The cost is \$9.10 for each strip and its accompanying record.

SECTION II

ORGANIZING, CONDUCTING, AND EVALUATING CLASSES

THE OBJECTIVES OF INSTRUCTION

In equipping the patient to live successfully with his diabetes, there are three primary areas of instruction to consider—knowledge, skills, and attitudes. Effective instruction in each of these three areas becomes the objective of the patient education program in diabetes.

Diabetic patients need **KNOWLEDGE** about the physiology of the disease—what insulin is and how it works; the role of food in controlling diabetes; the values of different foods; the relation of food, insulin, and exercise to the amount of sugar in the blood; and the relation of heredity to the disease. Patients should also have some understanding of the symptoms of diabetes out of control; the tests that can be used to indicate the degree of control; the possible complications of diabetes; and the prevention of insulin reaction, coma, and infection.

Patients need **SKILLS** in administering insulin and handling equipment properly; following a prescribed meal plan and using food exchange lists for variety; planning meals at home and making wise selections outside the home; performing urine tests as directed; taking the necessary action when symptoms indicate lack of control; working out a suitable amount of work and exercise; and following good health practices.

“We learn by doing.” Therefore, in order to acquire skills, patients

realize that others in the group have the same problems, and that together they can help each other work out the solutions.

PREPARING FOR THE CLASSES

In planning for the classes it may be desirable to limit the size of the group to about 15 or 20 people. This will allow the patients more freedom to exchange and discuss their problems and experiences, and to acquire skills through practice in class. Keeping the class periods free from outside interruption will also help the members to work together more effectively as a group.

To make full use of the teaching aids, the instructor must become familiar with the purpose of each film, its content, and supplementary material related to the subject under discussion. The film guides will provide a wide range of information about the films, typical questions raised by patients, and suggested follow-up activities. The instructor will also want to review the filmstrips once or twice in order to become thoroughly familiar with their content.

The instructor should check the following arrangements in advance of the classes:

- Make sure that the proper electrical current is available.

- Have the necessary extension cords and plugs handy at all times.

- Thread the projector and test it with sound.

- Clean the lens, film gate, and glass surfaces before each showing.

- Place the screen where everyone can see it.

- Make sure the room can be darkened.

- Have the picture properly framed and in sharp focus.

- Know how to adjust the tone and volume controls to the size of the room.

- Know how to advance the film at the proper signal in order to keep the sound and film synchronized.

Patients will be more likely to feel comfortable and discuss their problems if they can sit in an informal living room atmosphere. Whenever the chairs are movable they might be arranged in a semicircle so that each member can see the others. Informality can be further encouraged if the instructor sits down with the group and becomes a part of it. The instructor should see that the room is the right temperature and is well lighted. He should also acquaint diabetic patients with the locations of toilets and drinking fountains.

CONDUCTING THE CLASSES

In the first meeting, the members will want to know the purpose of the classes, what they may expect from them, and the extent to which their questions will be answered. The classes and supplementary materials are designed to help members recognize and discuss their problems and arrive at practical solutions to them.

Since people are hesitant about sharing their personal problems with strangers, it is important that they become acquainted with one another. A personal introduction of each member of the group to the class as a whole may serve as a good springboard for launching the instruction. The instructor might encourage the patients to tell the others something about themselves, how long they have had diabetes, how they found out they had it, whether they are using insulin, any unusual problems they face, and what they would like to get out of the class.

Each class should begin with a selected topic for discussion. There may be a tendency for some people to believe that the primary purpose of the classes is to show filmstrips. The films should be considered as a set of tools or aids to be used in the teaching program. The use of the films will be most effective when they are introduced in such a way that the patients can see the relationship between the content in the films and the subjects under discussion.

Each filmstrip ends with a series of leading questions. After the film has been shown, these questions might be used as a logical takeoff point for discussion. If, however, other questions come spontaneously from a patient, it is usually better to start the discussion with the patient's questions. Many other types of questions which may be used to stimulate discussion are included in the film guides.

The instructor may be strongly tempted to answer all of the questions for the patients. If, however, he asks other members of the group to give their answers to the questions, the members will not only share experiences and help each other, but the instructor may be able to detect misunderstandings and misconceptions the patients have acquired.

There may be some questions raised that should be answered by the patient's private physician, such as those which deal with changes in the prescribed treatment, adjustment of insulin, use of alcoholic beverages, or frequency of blood sugar tests. Some questions may be asked to which the instructor does not know the answers. The instructor should not hesitate to say "I don't know," and should assure the patient that his question will be answered at the next class.

Following the discussion, the patients may engage in class activities. A list of suggested projects appears in each film guide. These follow-up activities can be very helpful in increasing the knowledge and skills of the patients.

A brief summary of the main points that have been discussed will help crystallize the important things the patients should remember. At the close of the first class, the booklet, "Taking Care of Diabetes," Public Health Service Publication No. 567, can be distributed. It will serve as a reference for the patients after they leave the classes.

Decisions about when to adjourn will depend upon the interest shown in the topic under discussion. Usually the span of interest does not last much over an hour. However, if the members of the group become interested

in their activities, they may decide that they would like to stay for a longer period.

Consideration should be given to the subject for the next class. The instructor might encourage the patients to decide upon the activities to be conducted and to bring the necessary materials to carry out these activities. Preparing for the class ahead of time will help to increase the interest and produce more participation.

Usually a few problems arise whenever a new group gets together for discussion. Examples are: the person who talks too much; the person who does not talk at all; or the group that finds difficulty in staying on the subject.

The person who talks too much usually is expressing a need for attention. He can be given a job responsibility; he can be asked to wait his turn while others are recognized; or the instructor can interrupt him by saying: "That's a good point. Is there anyone else in the group who has had a similar experience?"

The person who does not talk at all may find difficulty in expressing new ideas. This does not mean that he is not thinking about his problems. The instructor might encourage him to support ideas that have already been expressed by others, help him feel free to raise questions on points he does not understand, and make sure any contribution he makes does not go unnoticed.

When a group strays from the subject, the instructor might raise a question that brings the discussion back to the point or call the attention of the group to the fact that they are off the subject. Usually a group is willing to go back if it is permitted to dispose of the problem at hand.

EVALUATING THE SUCCESS OF THE CLASSES

Every teacher is looking for a way to improve his instruction. After each class he may want to ask himself questions like the following:

1. Did the members seem to be interested throughout the session?
2. Was the discussion based upon the needs and expressed desires of the group?
3. Did the questions the patients asked indicate interest and understanding of the subject?
4. Did the patients in their follow-up activities show increased skills after practice?

Most teachers also want to know whether the time they spend teaching helps the patients to live more successfully with their diabetes. The only way to do this is to evaluate the progress that patients have made in terms of the objectives of the course. After all, it is the patient's improved control over his diabetes that indicates whether the knowledge, skills, and attitudes stressed in the course have had any real effect on his behavior.

Precise information about the patients' behavior is not always easy to obtain. Nevertheless, by careful observation, review of clinical records,

and personal interviews with the patients and members of their families, it is often possible to get a reliable picture of the changes that have taken place during the course of instruction. These are some of the topics about which the instructor may wish to inquire:

1. Does the doctor believe that the patients' control over their diabetes has improved? Have the patients been free from insulin reactions and coma? Do the clinical tests give additional evidence of improved control?
2. Are the patients taking proper care of their feet? Do they report infections to the doctor?
3. Are the patients using their meal plans at home and in eating away from home? Are their meals more varied than they were formerly? What different foods are they eating? Do they have greater confidence in their ability to select foods for their meals?
4. Have the patients improved their technique of administering insulin? Do they practice the suggestions that were made regarding spacing of injections and the care of equipment?
5. How many patients, for whom insulin is prescribed, administer their own?
6. Do the patients make urine tests as directed by their doctors? Do they have a better understanding of what the tests mean?

These questions are only suggestive of the kinds of things for which the teacher can look in evaluating the effectiveness of his classes. It is often profitable for the teacher to plan his evaluation cooperatively with his professional colleagues—doctors, nurses, nutritionists, medical social workers, and others on the staff. By discussing beforehand the types of information that each can furnish, provision may be made to observe patients more closely and to keep records on their progress.

Section III

DISCUSSION GUIDES

Part 1 What is Diabetes?

I. PURPOSE OF THE FILM

A. To help a patient develop a wholesome attitude toward diabetes by giving him a better understanding of what diabetes is and how it may be controlled.

B. To emphasize the need for the patient to cooperate with his doctor in keeping his diabetes under control.

C. To help the patient accept major responsibility for management and control of his diabetes.

D. To stress a positive point of view showing how a person with diabetes can continue to live a healthful, useful, and happy life.

II. IDEAS SUGGESTED BY THE FILM

A. Diabetes is a condition in which the body does not have sufficient insulin to use properly the sugar from foods that are eaten.

B. A person with diabetes may have certain signs and symptoms.

1. Increased thirst.
2. Increased appetite.
3. Increased urination.
4. Tiredness.
5. Loss of weight.

C. The laboratory evidence of diabetes is established by blood sugar tests and urine sugar tests. In uncontrolled diabetes

there is too much sugar in the blood, and also sugar in the urine.

D. Certain individuals are more likely to develop diabetes than others.

1. Persons who have blood relatives with diabetes.
2. Persons who are over 40 years of age.
3. Persons who are overweight.

E. Insulin has an important function in the body.

1. Insulin helps the body use the sugar obtained from food. When food is eaten, some of it turns into sugar and goes into the blood. It is normal for everyone to have some sugar in his blood.

2. Insulin turns the sugar in the blood into energy for the body to use.

3. A person with diabetes does not have enough insulin. Therefore, the sugar in his blood cannot be used properly. Unused sugar accumulates in the blood, and some of it may be passed off in the urine. When this happens, such sugar cannot be turned into energy. The patient then may feel tired and weak.

F. Diabetes can be controlled.

1. When food and insulin are not in balance, diabetes is out of control.

2. To keep diabetes under control, food and insulin must be balanced. A given amount of food requires a proportional amount of insulin to balance it. When food and insulin are in balance the sugar in the blood stays within normal limits, and no sugar is lost in the urine. Before

the discovery of insulin, a starvation diet was the only way of controlling diabetes. Now bottled insulin supplements deficient supplies of body insulin for many patients.

3. The method used in controlling diabetes depends upon the amount of insulin supplied by the body.

- a. When the supply of body insulin is limited only slightly, the amount of food eaten can be cut down to balance the amount of insulin available. In this way diabetes will be controlled.
- b. When the supply of body insulin is very low, it is not practicable to decrease the amount of food enough to balance the small amount of insulin. In such a case, the doctor prescribes the amount of food the person needs for daily activity and the amount of bottled insulin necessary to balance this food.

G. By taking care of diabetes the patient's chances of maintaining his health and living a longer, more productive life are much better.

1. The food that the patient eats will be used properly and provide needed energy for his work and play.
2. He will be in much better condition to resist infection and to promote healing of cuts and bruises.
3. Control prevents the diabetes from becoming more severe and lessens the possibility of either diabetic coma or insulin reaction.
4. Control helps prevent the development of any serious complications from diabetes.
5. The person whose diabetes is under control is usually able to be steadily employed in most types of work.

H. The patient should develop a good understanding of what diabetes is and how he can assume a major responsibility for its control.

1. Persons with diabetes can acquire a great deal of skill in self-management of their diabetes if they desire to learn and if they receive adequate instruction.

2. As each individual is different, so is each individual's diabetes somewhat different. Therefore, the kind and amount of food and insulin prescribed for one patient may not be suitable for another.

3. The person who learns how to use his meal plan and exchange lists, and who follows them carefully each day, will help keep his diabetes under control.

4. Patients who need to take insulin should learn how to measure insulin accurately and to inject it themselves.

5. The daily insulin requirement is much easier to regulate if the amount of exercise is about the same each day.

6. The degree of control of diabetes can be determined to a certain extent by periodic urine and blood sugar tests.

7. A definite schedule for urine and blood testing should be established as a check on how well the diabetes is being managed. The diabetic condition may improve or become worse from time to time so that changes in the amounts of food and insulin may have to be made.

8. Periodic visits to the doctor are necessary to assure that the diabetes is being kept under control and that the patient's general condition is satisfactory.

2. Since blood relatives of diabetics have a greater chance of developing diabetes, they should be tested periodically to determine whether or not they are developing the disease.
3. Diabetes does not affect a person's appearance. A diabetic cannot be recognized as such by the way he looks.
4. Diabetes is not a contagious disease.
5. The person with diabetes usually can continue his employment, social, and recreational activities.
6. With some knowledge of diabetes and how it is controlled, the diabetic can engage in practically the same types of activity that the nondiabetic does, except that he must plan his activities carefully.
7. Diabetes usually does not cause much trouble if it is discovered early and kept under control.

J. It is important for the person with diabetes to accept his condition and be willing to make the necessary adjustment to the disease.

1. The mental and physical well being of the diabetic is largely dependent upon his attitude toward his condition and how well he manages his diabetes.
2. The doctor can supply the instruction necessary to control diabetes. When the patient cooperates with his doctor and follows the instructions, he improves his self-management and maintains better control of his diabetes.
3. The person with diabetes who has learned to control his condition by good self-management develops a strong character through self-discipline in gaining control of his habits and desires.
4. Many diabetics have made good adjustments, have become leaders in their work, and have made outstanding contributions to the world and to society.

K. Recent developments in the field of diabetes control have made possible better living for diabetic patients.

1. Although no cure for diabetes is known as yet, the means of controlling the disease have been steadily improved.
 - a. A wide variety of food is now allowed so that the patient can eat almost every kind of food.
 - b. Insulin has been improved to the extent that most diabetics need only one injection a day.
2. Research concerned with the causes, improved treatment methods, and the possible cure of diabetes is going on throughout the world.

III. SUGGESTED FOLLOW-UP ACTIVITIES FOR THE GROUP

A. Encourage the patients to talk with each other about their diabetes as a means of learning or profiting from one another's experience. The following topics might be covered:

1. How they first found out they had diabetes.
2. At what age did they develop diabetes?
3. How long have they had diabetes?
4. How did they feel at the time the diagnosis was made?
5. What treatment was advised?
6. How do they feel about having diabetes now?

B. People are keenly interested in heredity as it pertains to diabetes. Encourage patients to discuss the reasons why their relatives should be tested for diabetes. A diagrammatic sketch of the heredity pattern could be drawn on the blackboard.

IV. TYPICAL QUESTIONS PATIENTS ASK

- A. *What is diabetes?*
- B. *Will I outgrow diabetes?*
- C. *Why can't I eat all I want, and simply control my condition by larger doses of insulin?*
- D. *Why do I need insulin if I stay on a diet?*

E. *What would diabetes do to my baby if I should become pregnant?*
 F. *Is there a cure for diabetes?*
 G. *Is diabetes contagious?*
 H. *Does having diabetes shorten one's life?*
 I. *Is diabetes very common in children?*
 J. *Can diabetes be inherited?*
 K. *Is the pancreas the only gland that is involved in diabetes?*
 L. *Does eating too much candy cause diabetes?*
 M. *Does being fat cause diabetes?*
 N. *Does nervousness or worry cause diabetes?*
 O. *Is there any particular age at which one might get diabetes?*
 P. *Does diabetes cause the development of other conditions like high blood pressure?*

Q. *What can I do about itching (lower abdomen and genitals)?*
 R. *What about employment for diabetics? Can they do any kind of work?*
 S. *No one in my family had diabetes until I developed the disease. Was there any heredity factor involved?*
 T. *I had already had my children before I found out that I had diabetes. Is there anything that I can do now to keep them from developing it?*
 U. *I'm self-conscious about my diabetes. I don't like to go to the club because they serve rich foods and I'd rather stay away than have to refuse and be different. Is there anything I can do about this?*
 V. *Does it do any harm to have a beer once in a while, or to take a drink occasionally?*
 W. *Should two people who have diabetes marry?*

Part 2

Eating for Good Health

I. PURPOSE OF THE FILM

- A. To aid the diabetic and his family in gaining a better understanding of his condition, and the foods he may eat.
- B. To stress the role of food in controlling diabetes and maintaining good health.

II. IDEAS SUGGESTED BY THE FILM

- A. Food is important in diabetes control.
 1. Diabetes may be defined as a condition in which the body does not have enough insulin to utilize properly the sugar from foods that are eaten.
 2. The person with diabetes must eat the right foods in the right amounts because of the limited supply of insulin in his body.

B. A meal plan shows what to eat, and how much to eat.

1. The doctor works out with the patient a meal plan to meet his body needs, taking into account his age, weight, type of work, exercise, and food likes.
2. The meal plan includes most of the foods that everyone should eat to maintain good health.
3. In addition to the meal plan, the patient is given exchange lists which show how to use one food in place of another for variety.
4. By studying the meal plan and exchange lists the patient will learn how to select the right foods in the right amounts.

C. The patient should discuss his condition with other members of his family.

1. They will better understand how to help him control his condition.
2. They will learn that he can eat nearly all of the foods that other people eat. However, the amounts of certain foods will be limited.
3. It is easy to plan family meals to include foods that the patient can eat.

D. Most foods contain sugar; some contain more than others.

1. Milk, vegetables, fruits, and bread are some of the foods that are converted into sugar in the body.
2. Such foods as potatoes, corn, bread, and bananas are high in sugar content, whereas cabbage, radishes, lettuce, celery, and lemons have less sugar in them.
3. Concentrated sweets such as pies, cakes, sugar, and honey are not usually included among the foods that diabetics should eat.

E. The body requires insulin to utilize food for energy.

F. Spacing meals at regular intervals throughout the day gives the body sugar to provide a steady supply of energy.

1. Meals should be eaten at about the same time every day.
2. Doctors often prescribe snacks between meals or at bedtime for patients who take long-lasting insulin preparations.

G. The meal plan provides enough of the right kinds of food for the diabetic to enjoy his meals and maintain good health.

1. It is important for the diabetic patient to measure carefully most of the foods that he eats.
2. Too much food puts a strain on the body.
3. A person gets fat when he eats more food than his body needs.
4. When a patient is overweight, his

diabetes may be more difficult to control.

III. SUGGESTED FOLLOW-UP ACTIVITIES FOR THE GROUP

A. Find out if each patient has a meal plan and exchange lists.

B. Have patients bring their own meal plans to each class so that they can discuss them and plan some meals for themselves.

C. Find out if any of the patients are having difficulty in using or following their meal plans. Arrange individual consultations for patients needing help with their meal plans.

IV. TYPICAL QUESTIONS PATIENTS ASK

A. *Why is it necessary for me to have a diet when I have diabetes?*

B. *How can I find out what foods are best for me to eat?*

C. *Will it make any difference if I don't always eat all the foods on my meal plan?*

D. *Do I have to eat the same foods every day?*

E. *Are there any foods that I should not eat?*

F. *May I use sugar from the sugar bowl occasionally?*

G. *Should I stop eating everything that has sugar in it?*

H. *Other than by sweetening my foods from the sugar bowl, is there any other way for my body to obtain sugar?*

I. *Does everything I eat have sugar in it?*

J. *What kinds of food contain the most sugar?*

K. *How does insulin help the body to use food?*

L. *If I eat an extra big meal, as on Thanksgiving, is it all right to take extra insulin?*

M. *Why do some people have to take insulin even though they follow their diets?*

N. *Is it all right to skip breakfast on Sunday morning so I can sleep late?*

O. *If I am busy at meal time is it all right to put off my meal until later?*

P. *Should I have a bedtime snack?*

Q. *May I eat between meals?*

R. *Do I have to eat different foods than other members of my family eat?*

S. *Why can't I eat all the foods I want?*

T. *How long do I have to stay on a diet?*

Part 3

Insulin and Its Use

I. PURPOSE OF THE FILM

A. To give the patient some understanding of what insulin is, where it comes from, and how it functions in the body.

B. To explain why some people with diabetes need to take insulin.

C. To show the different kinds and strengths of bottled insulin.

D. To demonstrate a technique for injecting insulin.

E. To illustrate a method for the care and handling of the equipment necessary for insulin injections.

II. IDEAS SUGGESTED BY THE FILM

A. Insulin comes from the pancreas.

1. The pancreas is a gland which is located in the abdominal cavity just below and behind the stomach.

2. The pancreas should make enough insulin each day to enable the body to use the food that is eaten.

B. When a person has diabetes his pancreas may not make enough insulin.

1. Lack of insulin produces symptoms like being tired, thirsty, hungry, and passing too much urine.

2. When the pancreas does not make enough insulin the doctor may need to prescribe bottled insulin to make up the deficiency.

a. Mild diabetes often can be controlled by diet alone.

b. Some diabetics need to take bottled insulin in addition to following a prescribed diet.

3. The extra insulin is needed to help maintain the proper balance between the food that is eaten and the insufficient supply of insulin being produced by the pancreas.

C. Diabetes remains under control when there is the right balance in the body between food and insulin.

D. There are five types of bottled insulin that are used in this country. They are unmodified insulin, globin insulin, NPH insulin, lente insulin, and protamine zinc insulin.

1. Unmodified insulin acts quickly and works for about 6 hours.

2. Globin insulin acts more slowly and works for about 20 hours.

3. NPH insulin also acts slowly and works for about 24 hours.

4. Lente insulin acts for about the same length of time as NPH insulin, around 24 hours.

5. Protamine zinc insulin acts very slowly and usually works for 30 to 40 hours.

6. Each of the five types of insulin comes in two strengths: U80 and U40.

a. The U80 insulin is twice as strong as U40.

b. To make identification easier, the U80 insulin bottle has a label with a green color on it.

c. The U40 insulin bottle has a label with a red color on it.

7. It is very important to check the label on the insulin bottle to make sure the type and strength conform with that prescribed by the doctor.

8. The diabetic should use only the kind and amount of insulin prescribed by his doctor, because each individual has a prescription to fit his own needs.

E. The only effective way to take insulin into the body is by injecting insulin through the skin.

1. Insulin can be injected into the upper arms, thighs, buttocks, and upper abdomen.

2. A different place on the body should be chosen each day to make the injection. This will allow the insulin to become absorbed better at each place of injection, and help prevent the development of hard lumps or irritation of the skin.

F. The patient should take special care in handling his insulin, syringe, and other equipment in order to keep them clean and ready for use.

1. Sufficient alcohol should always be kept on hand to use for cleaning and sterilizing the equipment.

2. The syringe should be kept in a bottle filled with alcohol when it is not in use.

3. The insulin should be kept in a cool place in its original container.

4. Cotton should be kept in a covered jar.

5. The two safe places to hold the syringe are the barrel and the top of the plunger. The needle and plunger shaft should not be touched during injection, or handled unnecessarily.

6. When the needle is pulled out of the rubber cap of the insulin bottle, or out of the skin after the injection, it should be held by the hilt.

7. Alcohol should be used in rinsing out the syringe and needle after each use.

This prevents the parts of the syringe from sticking.

8. The equipment should be boiled for at least 10 minutes once a week to maintain cleanliness.

9. The equipment should be kept together on a small tray so it will be handy to use.

G. Following are the steps which should be taken by the patient in giving himself an insulin injection:

1. Wash the hands thoroughly before handling any of the equipment.

2. If the type of insulin to be taken is a cloudy preparation, roll the bottle gently back and forth between the hands until the preparation is thoroughly mixed.

3. Clean the rubber cap of the insulin bottle with the cotton wet with alcohol to prevent infection or the spread of germs.

4. Remove the syringe from the bottle filled with alcohol and push the plunger in and out to remove all of the alcohol in the syringe.

5. Pull the end of the plunger back and set it at the unit mark on the barrel which shows the amount of insulin to be taken.

6. Hold the insulin bottle upside down and push the needle up through the rubber cap. By pressing the plunger in, enough air will be inserted into the insulin bottle to replace the units of insulin which will be withdrawn from the bottle.

7. Pull the plunger back slowly to fill the syringe with the prescribed units of insulin. This will prevent getting any air bubbles into the syringe.

8. Pull the syringe out of the rubber cap by holding the hilt of the needle.

9. The syringe containing the prescribed amount of insulin should be put down carefully so that the needle will not touch anything.

10. With a piece of cotton wet with alcohol, clean the skin at the point where the injection is to be made.

11. Squeeze up a large roll of flesh to provide more soft skin so the injection can be made more easily and so the needle will not go into the muscle.
12. Hold the syringe like a pencil with one hand and push the needle straight in to insure getting the insulin well into the soft skin.
13. Press the plunger down slowly to prevent building up too much pressure and forcing the insulin to leak out around the hilt of the needle.
14. Pull the needle out by holding the hilt.
15. Press the injection spot a few times with cotton to help the insulin become absorbed.

III. SUGGESTED FOLLOW-UP ACTIVITIES FOR THE GROUP

- A. Ask the patients to bring to class their bottles of insulin and the equipment they use for the injection.
 1. Check to see that the equipment is in good condition.
 2. Find out if the patients are using the kind and strength of insulin prescribed for them.
 3. Check with the patients to see if they are measuring correctly the amounts of insulin they are supposed to take.
 4. Show the patients how to sharpen their needles, and have them do so in class.
- B. Encourage the patients to talk about the problems they are meeting in taking their insulin, and allow other members of the class to describe how they have solved some of these problems.
- C. An easy method of determining whether the patient is following the correct procedure for insulin injection is to examine the skin around the sites of the injections. If the skin shows irritation, hard lumps, or

infection, the patient may be making his injections incorrectly.

D. Ask the patients to collect and bring to class any items they read that have some relation to insulin. For example, the caption of one newspaper article, dateline: February 16, 1956, was, "New Diabetic Pills to Erase Insulin Shots Are in Offing."

1. Guide a discussion of the material
2. Clear up any misconceptions or misinterpretations.
3. Emphasize the status of the material—factual, experimental, theoretical, advertising.

IV. TYPICAL QUESTIONS PATIENTS ASK

- A. *What is insulin--where does it come from?*
- B. *How many kinds of insulin are there?*
- C. *Once I start taking insulin, does it mean I will have to take it the rest of my life?*
- D. *Does insulin cure diabetes?*
- E. *Is insulin used to treat other conditions or diseases?*
- F. *Does insulin ever make a person sick? Does it cause hives, unconsciousness, or blindness?*
- G. *Is insulin a habit forming drug, so that the longer a person takes it the more of it he needs?*
- H. *Why do I get hard red spots at the place where I inject the insulin?*
- I. *Is it normal for the place where insulin is injected to become red and itchy?*
- J. *Does my syringe have to be boiled every day to keep it sterilized?*
- K. *I don't like the idea of injecting a needle into my leg to get my insulin--isn't there some other way to take insulin?*
- L. *Is it all right to use the new type of syringe (self-injecting) to take my insulin?*
- M. *Is there any way to keep the needle from hurting?*
- N. *How can the needle be sharpened when it gets dull?*
- O. *Am I supposed to take my insulin before or after eating?*

P. What about protamine zinc insulin--is it supposed to be taken before or after breakfast?

Q. How soon after injection does NPH insulin take effect?

R. Does each type of insulin act differently?

Part 4

Planning Good Meals

I. PURPOSE OF THE FILM

A. To show the patient how he can plan a wide variety of meals by using his meal plan and exchange lists.

B. To explain the function of carbohydrates, proteins, fats, vitamins, and minerals in maintaining the health of the individual.

II. IDEAS SUGGESTED BY THE FILM

A. The meal plan and exchange lists allow a wide variety of meals.

1. The meal plan includes many foods that the patient is accustomed to eating.
2. It allows enough food for the kind of work that the patient does and the amount of exercise he takes.
3. It tells the patient the kinds of food he needs in his diet.

B. Certain kinds of food are needed every day.

1. Foods like potatoes, cereals, breads, vegetables, and fruits contain starch and sugar. Starches and sugars--called carbohydrates--provide energy for work and play.
2. Meat, fish, poultry, eggs, and cheese contain proteins necessary for growth and repair of the body.
3. Butter, margarine, salad dressing, salt pork, and bacon contain fat. Fats also provide energy for work and play.
4. Most of the foods that provide carbohydrates, proteins, and fats also supply vitamins and minerals.
5. Vitamins help the individual to use

the food he eats and help to keep the body healthy.

6. Minerals help in preventing anemia and keeping the bones strong.

C. The person with diabetes should avoid gaining weight.

1. Too much weight is a strain on the body and makes diabetes worse.
2. Diabetes is more difficult to control in people who are overweight.
3. People get fat when they eat more than their bodies need for the work they do and the exercise they take.
4. When several members of the same family are overweight, this is most likely due to the kind of meals served rather than to any "family tendency to be overweight."
5. The meal plan worked out for the patient gives him enough food for his daily living and helps him to maintain his ideal weight.

D. When family meals are well planned, the person with diabetes can eat most of the foods that others in the family eat.

1. Most of the foods that the person with diabetes eats do not have to be prepared separately.
2. The person with diabetes can enjoy eating his meals with his family.

E. The exchange lists show how one food can be used in place of another to add variety to the patient's meals.

1. The bread exchange list shows how much of such foods as rice, cereals, rolls or potatoes to use in place of bread.

2. The meat exchange list shows how much of such foods as fish, chicken, eggs, or cheese to use in place of meat.
3. Using all of the exchange lists will make it easier to plan a wide variety of tasty meals for the patient.

F. Certain foods can be used for dessert.

1. The patient can use several kinds of fruits according to the amount he is allowed on his meal plan.
2. Fruits may be used plain, in gelatin, or combined in salads.
3. Foods like pies, cakes, jellies, and honey contain considerable amounts of sugar and should not be eaten unless they are specifically planned for in the diet.

III. SUGGESTED FOLLOW-UP ACTIVITIES FOR THE GROUP

A. Select a patient who is willing to have his meal plan placed on the blackboard. Have the other members of the class suggest different kinds of food that could be used in the meal plan.

B. Have members of the group arrange foods, food models, or pictures of food into whichever exchange list they belong. This might be done for each of the bread, meat, fat, milk, fruit, and vegetable exchange lists.

IV. TYPICAL QUESTIONS PATIENTS ASK

A. *What are the different kinds of food that I should eat every day?*

B. *Why should I eat each of the different kinds of food every day?*

C. *Where do carbohydrates come from?*

D. *How much carbohydrate should I eat each day?*

E. *How can I find out how much food I should eat?*

F. *Why are bread and potatoes restricted in my diet?*

G. *What are vitamins?*

H. *How do I get the vitamins and minerals I need each day?*

I. *Do I get minerals from mineral oil?*

J. *If my meal plan doesn't include enough for me to eat, what should I do?*

K. *If I don't like a particular food on my diet, may I eat some other food that I do like?*

L. *May I have a bedtime snack if my meal plan doesn't include one?*

M. *Is it all right for me to save some of my food from a meal to eat later?*

N. *Does every person who has diabetes use the same meal plan and exchange lists?*

O. *Why do some people get fat?*

P. *Are fat people the only ones who have diabetes?*

Q. *How does being overweight affect a person who has diabetes?*

R. *How can I find out how much I should weigh?*

S. *Is it all right to eat honey, since it is a natural sugar?*

T. *May I eat pie or cake if I take extra insulin?*

U. *Would my meal plan be a good guide for planning well balanced family meals?*

Part 5

Insulin Reaction

I. PURPOSE OF THE FILM

A. To help the person with diabetes to recognize and understand the symptoms of an insulin reaction.

B. To show some of the causes of insulin reaction.

C. To present ways of preventing the occurrence of insulin reactions.

D. To discuss some of the effective means of emergency treatment.

E. To point out that insulin reactions can have serious effects upon a patient.

II. IDEAS SUGGESTED BY THE FILM

A. An insulin reaction may be considered as the way a patient's body reacts to too much insulin.

1. The warning symptoms of an insulin reaction can be recognized by the way a patient feels and acts.

- a. The patient may feel irritable, weak, or nervous.
- b. He may break out in a profuse sweat.
- c. He may have a headache and occasionally become nauseated. These symptoms occur more often in reactions to protamine zinc, NPH, and lente insulins.
- d. Inability to sleep well may be a symptom of a mild reaction to protamine zinc insulin.
- e. An insulin reaction may be preceded by an otherwise unexplained feeling of anxiety and apprehension.
- f. If the insulin reaction becomes worse, the patient may become extremely excited, laugh or cry, become dizzy or drowsy, and may even become unconscious.
- g. The skin usually feels cold and wet.
- h. The vision may become blurred.

2. An analysis of the blood during an insulin reaction will show that the amount of sugar in the blood is below normal.

3. If a patient develops insulin reaction, his diabetes is out of control because the food and insulin in his body are out of balance.

B. Insulin reactions may be caused in several different ways.

1. Taking too much insulin causes an insulin reaction.

- a. This might be done by measuring

and taking more insulin than has been prescribed by the doctor.

b. It can also be done by taking a greater strength of insulin than has been prescribed, such as using U80 in the same amount as U40 would be used. When this occurs, the patient takes twice as much insulin as he should.

2. Using any kind of insulin other than that prescribed may cause a reaction to insulin.

3. If there is not enough food to balance the insulin in the body, an insulin reaction may result. Insulin reaction may be caused by:

- a. Not eating all the food allowed by the meal plan.
- b. Delaying the time of eating.
- c. Having a change occur in the body's need for food.
- d. Losing the food eaten because of vomiting or diarrhea.

4. Taking more exercise or doing heavier work than usual can cause insulin reaction.

a. Exercise helps to lower the blood sugar so that the same amount of insulin has a stronger effect.

b. With added work or exercise, the body needs more food and less insulin.

5. The diabetic condition may improve. If this happens the usual dose of insulin may be too large for the amount of food eaten.

C. The methods of treating most insulin reactions are simple and usually produce quick results.

1. The emergency treatment is to give the patient a form of sugar that will quickly raise the amount of sugar in the blood.

a. The form of carbohydrate used and how it is taken by the patient depends upon the state or condition the patient is in when the insulin reaction is recognized.

b. If the patient recognizes the symptoms early, he may take one or two

lumps of sugar or small candy drops. This form of sugar can easily be carried by the patient at all times, ready for such an emergency.

c. Sugar can also be taken in liquid form. A small glass of ginger ale, orange juice, soda pop, or one or two teaspoonfuls of sugar in water may serve the purpose.

2. The doctor should be called if the patient cannot swallow, so that he may inject sugar into a vein.

3. Intermediate and slow-acting insulin preparations act continuously over a fairly long period of time. For this reason, the treatment of a reaction to these preparations requires both a quick introduction of sugar into the system and some form of carbohydrate that is used more slowly by the body. For example: A person having a reaction from protamine zinc insulin might take a small glass of orange juice immediately and then a slice of bread or a glass of milk.

4. The patient should discuss with his doctor what to do for an insulin reaction in order to know just how much and what form of carbohydrate his doctor recommends for him.

D. Insulin reactions can have serious effects.

1. Depending upon the severity of an insulin reaction, the patient may progress from a state of mild discomfort to actual loss of consciousness.

2. Loss of self-control caused by insulin reaction may lead to accident or injury.

3. If the insulin reaction is severe, prolonged, and not properly treated, it may cause death. In most cases of insulin reaction, however, serious results do not occur.

E. It is important for the diabetic to understand the methods of preventing insulin reactions.

1. Reactions to insulin may be prevented

by eating all of the food allowed for each meal, and eating at regular times.

a. Eating the amount of food specified for each meal and eating regularly puts a certain amount of sugar into the blood at regular times.

b. Since with slow-acting insulins the sugar in the blood is used up steadily and uniformly, it needs to be replenished about every 4 hours in order to prevent an insulin reaction.

2. Conscientious attention to the physician's instructions regarding the type of insulin to be used, when it is to be injected, and the amount to be injected are important in preventing insulin reactions.

3. Doing the same amount of work and taking the same amount of exercise each day will help prevent insulin reactions.

4. If the doctor prescribes long-acting insulin, he usually arranges the food on the patient's meal plan to include something to eat at bedtime. This provides sugar during the night to balance the insulin.

F. Regular visits to the doctor will help the patient to keep his diabetes under control.

1. The doctor may want to make adjustments in the patient's treatment as the diabetic condition varies. There may be a need to change the meal plan or insulin dosage from time to time.

2. The patient should obtain information from his physician as to what he should do when he is involved in activity outside his ordinary routine. Eating extra food before or during dancing, bowling, gardening, or other activity where more than the normal amount of energy is expended is essential in preventing reactions.

3. When properly oriented about his diabetes, the patient can do practically anything a non-diabetic can do, as long as the activity is planned for.

III. SUGGESTED FOLLOW-UP ACTIVITIES FOR THE GROUP

A. Discuss the advisability of having the patient's family or close friends know how to recognize an insulin reaction. Stress the importance of the diabetic giving himself early treatment for mild reactions, and the importance of early attention by a physician for severe reactions.

B. Have various members of the group volunteer to describe some of their insulin reactions.

1. Have the members talk about the symptoms, treatment, and causes of any insulin reactions they may have experienced.

2. Encourage the patients to draw conclusions as to how they might prevent insulin reactions in the future.

C. Discuss with the group the use of identification cards and the reasons such a card should be carried by the diabetic.

1. Display and discuss with the group the identification cards that are available.

2. Have each member of the class who

does not have an identification card select and fill one out for his own use.

IV. TYPICAL QUESTIONS PATIENTS ASK

A. *Why do I feel weak when I take insulin?*

B. *Can I increase insulin and then eat more food, or vice versa?*

C. *What will happen if I take too much insulin?*

D. *How can I be sure I'm not taking too much insulin when my urine sugar test is continually blue?*

E. *Does insulin tend to make a person nervous?*

F. *Can a person die from an insulin reaction?*

G. *Can insulin reactions be harmful to a person?*

H. *Is there any particular time of the day that insulin reactions might occur?*

I. *Can something else be taken in place of two lumps of sugar to prevent an insulin reaction?*

J. *Can a person who doesn't take insulin still have an insulin reaction?*

K. *If I forget to eat my bedtime snack, am I likely to have an insulin reaction?*

L. *What does insulin do to sugar in the blood?*

M. *Is it important to tell my doctor about insulin reactions?*

Part 6

Buying Good Food

I. PURPOSE OF THE FILM

A. To explain how certain foods are arranged in groups called exchange lists.

B. To illustrate how these exchange lists help the patient to buy his foods in ordinary grocery stores.

C. To show the variety of foods that can be selected, and their relative food values.

II. IDEAS SUGGESTED BY THE FILM

A. The person with diabetes can select a variety of foods in his meal plan.

1. The patient is usually given exchange lists to use with his meal plan.

2. Most of the common foods are arranged in exchange lists so that the patient will know how to use one food in place of another.

3. For each kind of food allowed on the

patient's meal plan, the exchange list suggests several other foods which can be used in its place.

4. The foods on the patient's meal plan may be purchased at any grocery store.

5. It is not necessary to buy "special foods" because of diabetes.

6. The exchange lists can be helpful in buying the kinds and amounts of food needed.

B. Vegetables are divided into groups according to the amounts of sugar that they contain.

1. Vegetables like lettuce, cabbage, and spinach have such small amounts of sugar that average servings of these foods can be used freely.

a. Broccoli, chicory, spinach, green peppers, and tomatoes—although they contain small amounts of sugar—are rich in vitamins and minerals.

b. Some vegetables such as these should be eaten every day.

2. Vegetables like peas, carrots, beets, and turnips are also suitable foods for diabetic patients. However, since these vegetables have more sugar in them, it is particularly important that they be measured according to the meal plan.

3. Other vegetables that contain large amounts of sugar, such as potatoes and corn, are included on the bread exchange list. These vegetables can be used in place of bread.

C. The fruit exchange list includes almost all fruits.

1. Fruits such as oranges, grapefruit, lemons, cantaloupe, and berries are good sources of Vitamin C. The body needs some Vitamin C every day.

2. Fresh fruits containing large amounts of sugar are allowed only in small servings.

3. Fruits canned in their own juices without added sugar are the only canned fruits which should be used. When se-

lecting canned fruits, one should look for the label that says "unsweetened," "no sugar added," or "packed without sugar."

4. Ordinary canned fruits are packed in a sugar syrup, part of which is absorbed by the fruit. If it is ever necessary to use fruit canned with syrup, the fruit alone should be counted as two fruit exchanges.

D. The meat exchange list includes a variety of foods.

1. Some of the foods on this list are:

a. Meats like beef, pork, lamb, veal, and liver.

b. Fish such as cod, mackerel, herring, salmon, and shrimp.

c. Fowl such as chicken, duck, and turkey.

d. Eggs and various kinds of cheese.

2. The person with diabetes may eat the same kind of meat that is served to the rest of his family, but he should eat only the amount given on his meal plan.

E. Butter, cream, margarine, bacon, cooking oil, and lard are on the fat exchange list.

1. Butter and fortified margarine contain Vitamin A.

2. Fats add flavor to foods, but the patient should not eat more than his allowance. Fats tend to make a person gain weight.

F. Milk is on a list by itself because it contains many different food materials.

1. Whole milk, buttermilk, evaporated milk, or powdered milk all have about the same food value.

2. Evaporated milk is economical to buy. One 14-ounce can is about equal in food value to a quart of whole milk.

G. The foods in the bread exchange list contain relatively large amounts of sugar.

1. Breads, cereals, potatoes, corn, and similar foods should be measured carefully according to the meal plan.

2. Whole grain breads and cereals contain important vitamins and minerals.
3. Enriched breads and cereals have important vitamins and minerals added. Some of these vitamins and minerals were lost when the grain was milled.

H. By eating the right amounts, the person with diabetes can have most of the foods that his family eats.

I. Food for the person with diabetes should not cost any more than it does for any person who eats a well balanced diet.

1. The meal plan includes all of the foods necessary for a well balanced diet. If the person with diabetes has not been eating adequate meals, the meal plan may cost a little more than the diet to which he has been accustomed.

III. SUGGESTED FOLLOW-UP ACTIVITIES FOR THE GROUP

A. Divide the class into working groups of four or five people. Ask each group to take a meal plan belonging to one of the members, and plan a complete meal from foods that can be bought in a grocery store. Food models make this activity a realistic exercise.

B. Have a few of the patients bring to class some of the package or can labels from foods they are using such as bread, margarine, canned fruits, and fruit juices. The whole group can check the labels to see if they include words like "enriched," "unsweetened," and "no sugar added."

IV. TYPICAL QUESTIONS PATIENTS ASK

A. *How can I have more variety in my meals?*

B. *Is it all right for me to drink tomato juice any time I want it?*

C. *What about liver and pork? Are they too rich for me to eat?*

D. *Should I eat some butter or margarine every day?*

E. *Is it all right to take vitamin pills and not eat some of the foods on my meal plan?*

F. *What kind of vegetables are better to buy, green ones or yellow ones?*

G. *How should vegetables look when I buy them?*

H. *Since fruits are such good foods, can I eat all of them I want?*

I. *Isn't there more sugar in an orange than in a serving of prunes?*

J. *May I use regular canned fruits, if I rinse off the sugar?*

K. *How should I can fruits for use in the winter time?*

L. *Does all canned milk have sugar in it?*

M. *Is it all right to use skim milk instead of whole milk?*

N. *Does evaporated milk have the same food value as cream?*

O. *What can I use in my coffee in place of sugar and cream?*

P. *Does toast have less sugar in it than bread?*

Q. *Is there more sugar in dark bread than white bread?*

R. *Should I eat gluten bread if I like to eat a lot of bread?*

S. *Does "enriched" mean that more sugar has been added?*

T. *Are enriched foods more fattening than the plain ones?*

U. *What special foods should I buy because of my diabetes?*

V. *Is it all right to buy diabetic candy and soda water?*

W. *Is my diabetic diet any different from what other people should eat?*

Part 7

Tests in Diabetes

I. PURPOSE OF THE FILM

A. To show the relationship of urine sugar testing and blood sugar testing to the degree of control of diabetes.

B. To explain how the results of urine sugar testing show the presence or absence of sugar in the urine, and how blood sugar testing indicates how much sugar is in the blood.

C. To show how the patient can test his urine for sugar.

D. To outline courses of action that the patient can take when urine sugar tests are repeatedly positive.

II. IDEAS SUGGESTED BY THE FILM

A. Urine and blood sugar tests are used to indicate how well diabetes is under control.

1. The urine can be tested to determine whether it contains sugar.
2. The blood can be tested to find out how much sugar it contains and whether this amount is within the normal limits. Everyone has some sugar in the blood.
3. The amounts of sugar in the blood and urine indicate the treatment needed to control diabetes.

B. Sugar in the blood comes from food.

1. After it is eaten, some of the food turns into sugar. This sugar goes into the blood and is carried to different parts of the body to be converted into energy or to be stored.
2. When there is sufficient insulin, the body is able to use or store most of the sugar.
3. When there is not enough insulin, the

body cannot use or store all of the sugar, so the unused sugar accumulates in the blood.

C. In diabetes, sugar is present in the urine when there is too much sugar in the blood.

1. When unused sugar in the blood accumulates and rises above a certain level, some of the sugar spills over into the urine.

2. As the amount of sugar in the blood continues to increase, more and more sugar is spilled into the urine.

D. There are several different kinds of urine sugar tests that can be done at home.

1. *Clinitest*. This test uses a tablet containing a substance that produces enough heat to make the solution boil. The amount of sugar present in the urine is indicated by the colors blue, green, olive, brown, and orange. The kit is compact and convenient to use while traveling. Since moisture in the air may affect the tablets so they do not always work accurately, the cap on the bottle of tablets should be screwed on tightly.
2. *Galatest*. The test is done by adding one drop of urine to a white chemical powder. The amount of sugar in the urine is indicated by varying shades of gray to black. A black reaction indicates a large amount of sugar. The test is very simple, but other changes in shades may be difficult to interpret.

3. *Benedict's Test*. Benedict's qualitative solution is used. The test is done by boiling eight drops of urine in one teaspoonful (5cc.) of Benedict's solution. The amount of sugar in the urine is indicated by the colors blue, green, yellow, orange, and red. The test is economical, but requires a little more time

than other tests. The use of a stove for boiling the solution is necessary.

4. *Clinistix*. This is a new test based on an enzyme reaction that is specific for glucose. The enzyme-impregnated *clinistix* reagent strip is similar in appearance to a paperbook match. The strip is moistened with urine, and if it turns blue the test is positive, indicating the presence of glucose in the urine. If no blue color develops the reaction is negative. The test does not give a quantitative result. It should be noted that in this enzyme method, blue indicates a positive result, whereas in the familiar copper reduction tests blue indicates a negative reaction.

5. *Tes-Tape*. This is also a new test based on the enzyme reaction that is specific for glucose. The *tes-tape* is a narrow strip of yellow, enzyme-impregnated paper. This is moistened with urine, and if it remains yellow, the test is negative. Color changes to shades of green or blue mean a positive test and are read in terms of "pluses" or percentages, indicating approximate amounts of glucose in the urine.

E. *Benedict's Test*. The materials and instructions for performing this test do not come in a prepared kit.

1. The equipment needed:
 - a. Obtainable in a drugstore.
 - (1) A bottle of Benedict's qualitative solution.
 - (2) A test tube and a medicine dropper.
 - b. Probably available at home.
 - (1) A jar for collecting urine.
 - (2) A glass to hold the test tube and the medicine dropper.
 - (3) A teaspoon.
 - (4) A tin can or pan to use for boiling.
 - (5) A tray or box for keeping all the things together.
2. Following are the steps in testing the urine for sugar:

- a. Pour one full teaspoon of Benedict's solution into the test tube.
- b. Add eight drops of urine to Benedict's solution in the test tube and shake gently.
- c. Put the test tube containing the mixture into a can of boiling water.
- d. Boil for 5 minutes.
- e. Remove the test tube from the boiling water. A wire or metal test tube holder, or a folded piece of paper, can be used to prevent burning the fingers when removing the hot test tube.
- f. Read the results of the urine test by the color of the liquid in the test tube.
- g. Interpret the results of the urine test according to the following colors:
 - (1) Blue—no sugar in urine, or sometimes called negative.
 - (2) Green—a small amount of sugar, or sometimes called one plus (+).
 - (3) Yellow or brownish yellow—more sugar, or sometimes called two plus (++).
 - (4) Orange—still more sugar, or sometimes called three plus (+++).
 - (5) Red—a great deal of sugar, or sometimes called four plus (++++).
- h. Clean all of the equipment after using and put it away ready for use the next time.

F. Frequent urine sugar tests are necessary to show how well diabetes is being controlled.

1. It is recommended that most people with diabetes test their urine at least once a day. In some of the mildest cases the physician may feel satisfied with tests once or twice a week. More frequent tests are desirable when the urine test results show a lot of sugar.
2. Some of the common causes of sugar in the urine are over-eating (not following the meal plan properly), infections, or illnesses such as the common cold.
3. Suitable times of the day for testing the urine are: before meals (particularly

before breakfast), 2 to 3 hours after eating, and at bedtime.

4. The patient should do the tests more frequently when he has an infection or is feeling "out of sorts."

5. By keeping a record of the results of his urine tests, the patient can observe changes in his condition.

6. The patient should tell his doctor periodically about the results of his urine tests, and discuss with him any odd or frequent appearance of sugar in the urine.

G. The patient should know what to do when a large amount of sugar is found in the urine.

1. When the patient finds a lot of sugar in his urine, he should make two or three additional tests during the same day.

2. If a lot of sugar is present in the urine for two consecutive days, the patient should inform his doctor so that the necessary steps can be taken to bring his diabetes back under control.

H. Sometimes, when the urine contains a lot of sugar, the doctor may advise his patient to test the urine for acetone or diacetic acid.

1. Because diabetes gets out of control quickly in children, the doctor may recommend to the mother of a diabetic child that she learn to do an acetone test.

2. The presence of acetone or diacetic acid indicates that diabetes is seriously out of control, and that the patient may be developing diabetic coma.

a. *Acetone Test Powder or Acetest Tablets:* To test the urine for acetone, a few drops of urine are added to a prepared powder or one drop of urine is placed on a prepared tablet. If acetone is present appropriate color changes will result.

b. *The Ferric Chloride test for Diacetic Acid:* To test the urine for diacetic acid, a teaspoonful of ferric chloride solution is added to an equal amount of urine. If there is no color change, no

diacetic acid is present. If the solution changes to a reddish wine color, it is possible that diacetic acid may be present. The solution should then be boiled for a few minutes. If the color fades away, diacetic acid is present. If the color remains the same, diacetic acid is not present. Certain drugs like Empirin or Aspirin may cause the urine to show a false-positive result.

3. If either acetone or diacetic acid is present, prompt medical attention is needed.

4. These tests are usually not routinely performed by the patient, unless he either has severe diabetes or diabetes which the doctor feels may get out of control easily.

I. The doctor usually does a blood sugar test in addition to the patient's urine sugar test.

1. A blood sugar test shows the amount of sugar in the blood and the degree to which diabetes is under control.

2. Blood sugar tests give more exact information than urine sugar tests about how well diabetes is under control.

3. When diabetes is under control there is a normal amount of sugar in the blood, and usually little or no sugar in the urine.

4. In the diabetic, sugar only appears in the urine when his blood sugar is or has been too high.

5. When there is too much sugar in the blood, sugar appears in the urine and diabetes is out of control.

J. The amount of sugar in the blood varies.

1. The amount of sugar in the blood increases after eating.

2. When the body is using sugar properly, the blood sugar begins to decrease about 1 to 2 hours after eating.

3. This increase and decrease in the amounts of sugar in the blood is normal in both nondiabetics and diabetics whose condition is well controlled.

K. Blood and urine tests for sugar are valuable both to the patient and the physician.

1. Tests indicate to a patient whether his diabetes is under control, and help him to avoid complications.

2. Tests serve the physician in two ways:

a. They give the doctor objective evidence of how well the patient's diabetes is under control.

b. They serve as a guide in the adjustment of diet, insulin, and exercise for the patient.

III. SUGGESTED FOLLOW-UP ACTIVITIES FOR THE GROUP

A. Have the patients bring to class a record of the results of their urine tests for 1 week. Use these results as discussion points to demonstrate the various factors in keeping diabetes under control. Point out how the food eaten may have affected the results of the urine sugar tests.

B. Arrange a display of the various items of equipment used for testing urine, and discuss the methods used in each test. Patients could use each of the various types of tests to test samples of their urine.

C. Discuss with the patients the type of test that each is using, and provide a set of instructions for them to take home.

D. Provide a tabulation sheet for patients to record the results of their tests. Suggest that they keep a record of the tests for their doctor to see.

IV. TYPICAL QUESTIONS PATIENTS ASK

A. *Where does sugar in the urine come from?*

B. *What does a green urine test for sugar indicate?*

C. *Why do I have to receive insulin injections daily when my Benedict's test is nearly always negative?*

D. *If insulin is taken once a day, does urine have to be tested more than once a day?*

E. *How often should urine be tested?*

F. *Since I already know that I have diabetes, why do I have to do a Benedict's test of my urine?*

G. *Is the urine tested for things other than sugar?*

H. *I've noticed little white specks in the urine. Is that sugar?*

I. *Does the color of my urine before testing indicate the amount of sugar it contains?*

J. *Aren't there several ways to test for sugar in the urine?*

K. *When is the best time to test the urine?*

L. *Should I test my urine right away when I don't feel well?*

M. *Can a person with diabetes tell by the way he feels when he has too much sugar in his urine?*

N. *Where does the sugar in the blood come from?*

O. *How often do you think I should have a blood sugar test?*

P. *Why are some blood sugar tests done before eating, and some done after eating?*

Q. *Blood sugar tests are usually expensive. Is there some way in which I can get them done cheaply?*

R. *Why should I return to my doctor, or have a blood sugar test, when I know I'm all right because my urine tests are all negative?*

S. *Is the blood for a sugar test always taken from the arm vein?*

T. *What is the value of the blood sugar tests and urine tests to me or to my doctor?*

Part 8

COOKING GOOD MEALS

I. PURPOSE OF THE FILM

A. To show how the recommended practices that apply to cooking for the whole family also apply to the person with diabetes.

B. To demonstrate several different ways that foods can be prepared for the diabetic and his family.

C. To show that various types of seasonings can be used freely.

II. IDEAS SUGGESTED BY THE FILM

A. The way that food is prepared and cooked affects its food value and its flavor.

1. More vitamins and minerals are retained when vegetables and fruits are kept crisp and fresh until they are used.
2. Some vitamins and minerals are lost when foods are exposed to air, heat, or water.
3. If foods are soaked for long periods, the vitamins and minerals become dissolved in the water.
4. If foods are cooked in small amounts of water, less of the vitamins and minerals will be dissolved in the water. The vitamins and minerals that are dissolved will be more concentrated and can be used easily.
5. In cooking foods, the natural juices of meats and vegetables should be saved and used, since they contain some vitamins and minerals.
6. Serving foods immediately after preparation prevents the loss of flavor, due to exposure to air, heat, or water.

B. There are many ways to cook foods to get variety and flavor.

1. The following methods may be used

to cook meats, fish, poultry, and eggs.

- a. Roasting and baking at low heat keep the natural juices in the meat.
 - b. Broiling and pan frying are quick ways to cook, and help to bring out the flavor.
 - c. Stewing meats at low temperatures makes them more tender. When the meat is nearly done, vegetables may be added if desired. This avoids overcooking the vegetables.
 - d. Cooking eggs in water that is not quite boiling keeps the egg whites tender. Excess heat toughens the egg white. Eggs may be served soft, medium, or hard.
 - e. For fried eggs, scrambled eggs, or omelets the fat or milk used should be taken from the day's allowance.
 - f. The meat cooked for the whole family can usually be served to the person with diabetes. It is not necessary to cook his serving of meat separately unless flour, fat, or milk is added.
2. The following methods may be used to add flour, fat, and milk to foods.
- a. If flour, fat, or milk is to be added to foods, it is best to take out the patient's portion before these extras are added.
 - b. Flour is counted as a bread exchange and should be used only if less bread is taken.
 - c. Fat and milk may be used to cook and flavor foods, providing these are taken from the amount included in the meal plan.
 - d. Some of the fat allowed on the patient's meal plan may be used for pan frying.
 - e. The allowance of fat could also be used when cooking vegetables, or as a dressing for salads.

3. Here are some ways to prepare vegetables.

a. Vegetables may be served raw, baked, or boiled.

b. When boiling vegetables, fewer vitamins and minerals are lost if the vegetables are cooked until tender in a small amount of boiling water in a covered pot.

c. Any extra vegetable water left over from cooking can be used for gravies, soups, and drinks as a means of using the vitamins and minerals that have been dissolved.

d. Vegetables baked in the skin retain more of their vitamins and minerals.

e. Raw vegetables served as a salad or a first course add vitamins and minerals as well as color and texture to meals. Small green onions, celery, radishes, and salad greens can be used freely.

f. Vegetables from the same exchange group can be cooked together to make a mixed vegetable dish. One example is baked tomato and okra.

g. When vegetables like peas, carrots, and onions from the same exchange list are prepared together, they can be measured as one vegetable.

h. If vegetables from different exchange lists are used together, it is better to measure them separately and combine them later in order to take the amount that is allowed.

4. Here are some ways to prepare mixed dishes.

a. Mixed dishes like soups, stews, and desserts can be prepared by combining different food exchanges allowed on the meal plan.

b. Meat and vegetables may be cooked together to make a stew. The vegetables should not be added until the meat is nearly done. The meat and vegetables should be measured separately, according to the amount allowed. The unthickened juice from the stew may be used as desired.

c. Milk, vegetable, and meat exchanges may be combined to make soup.

d. A dessert like strawberry shortcake may be made by using a cup of strawberries as the fruit exchange, a small biscuit in place of one slice of bread, and whipped cream as the fat exchange. These foods should be taken according to the amount allowed for that meal.

5. Here are some methods for seasoning foods.

a. The flavor of foods can be improved by seasoning.

b. Salt is usually allowed in ordinary amounts.

c. Parsley, mint, garlic, onion salt, celery salt, vanilla, nutmeg, cinnamon, pepper, lemon, saccharin, and vinegar are some of the seasonings that add flavor to foods.

d. Mustard, sour pickles, and steak sauce can be used also.

e. A special salad dressing made from tomato juice, vinegar, onion, and other seasonings can be used freely.

C. The patient can be served his meals in the manner that they ordinarily are served to the rest of the family.

1. All members of the family can be served their meals together.

2. A plate for each person may be prepared in the kitchen.

a. In preparing the plate for the person with diabetes, an average size piece of meat or a medium size pork chop are about equal to three meat exchanges.

b. An average serving of a vegetable like small green beans or spinach can be used without measuring.

c. Carrots, potatoes, and similar vegetables should be measured according to the meal plan.

3. By learning the kinds and amounts of food he should eat, the patient can select most of them at the table when the meal is served family style.

III. SUGGESTED FOLLOW-UP ACTIVITIES FOR THE GROUP

Divide the class into working groups of four or five people. Ask each group to take a meal plan belonging to one of the members and plan a complete meal, using foods that might be prepared for the whole family. Emphasis should be given to the number of different ways these foods can be prepared so as to assure variety in the meals.

IV. TYPICAL QUESTIONS PATIENTS ASK

- A. *Is it true that we lose a lot of vitamins and minerals when we cook food?*
- B. *What does wilting do to vegetables?*
- C. *Are vegetable juices good to use?*
- D. *Do I have to cut all the fat off meat before I eat it?*
- E. *Should I strain the fat off meat juice if I use it for gravy?*
- F. *Is it all right to use plain meat broth or consomme to make soup?*
- G. *What are some different ways to cook liver?*

H. *May I have both bacon and eggs for breakfast?*

I. *Should I have an egg every morning for breakfast?*

J. *May I sometimes have eggs in place of cereal for breakfast?*

K. *What about fried foods? Does the fat count?*

L. *How should I count the "meat" or ham bone I use in cooking vegetables?*

M. *Does it matter if I use fresh, frozen, or canned vegetables for my meal?*

N. *Is it all right to use olive oil occasionally?*

O. *Is there any kind of salad dressing that I may use as much of as I may wish?*

P. *Does an overweight person's diabetic condition improve when his weight is reduced to normal?*

Q. *What are some desserts that I may fix for the person with diabetes?*

R. *Why does saccharin sometimes make foods bitter?*

S. *Should people with diabetes use less salt?*

T. *May I use my own recipes in cooking my food, or do I need a special cookbook?*

Part 9

DIABETIC COMA

I. PURPOSE OF THE FILM

A. To give some understanding of what diabetic coma is, and how it develops.

B. To discuss the seriousness of diabetic coma, and the need to see a doctor when the danger signs of coma appear.

C. To discuss how the making of daily urine sugar tests, following a meal plan, and taking the right amount of insulin are important means of keeping diabetes under control in order to avoid diabetic coma.

II. IDEAS SUGGESTED BY THE FILM

A. Diabetic coma may be the end result of uncontrolled diabetes. It develops in three main stages.

1. When the body lacks insulin, it is not able to use food properly and diabetes gets out of control.

2. When diabetes remains out of control the improper burning of fat in the body may cause acidosis ("acid poisoning").

3. Diabetic coma may be defined as a severe state of uncontrolled diabetes in which acidosis has developed.

4. This condition, if untreated, may be-

come more severe and result in unconsciousness or even death.

B. An insufficient supply of insulin in the body is the main cause of diabetic coma.

1. There are several ways that the body's supply of insulin may become insufficient.

a. A lack of insulin would result from not taking the amount prescribed or neglecting to take insulin when it has been prescribed.

b. Infections may lead to diabetic coma, because with infections the body needs more insulin.

c. Any illness may use up the body's supply of insulin, so that diabetic coma might result.

d. Overeating can upset the balance between food and insulin so that there is not enough insulin in the body.

e. The diabetic condition may change without any obvious reason. It may become so severe that the prescribed amount of bottled insulin would need to be increased, or a person not taking insulin might find that he needs to have insulin prescribed.

2. Diabetic coma develops when diabetes gets out of control and is allowed to remain out of control.

C. The symptoms of diabetic coma can be divided into two groups—the early symptoms and the late symptoms (or danger signs).

1. The early symptoms of diabetic coma are the same as those which a person might have at the onset of diabetes. They are:

a. Increased hunger, thirst, and urination.

b. Not feeling well.

c. Sugar in the urine.

2. If the early symptoms of diabetic coma are unrecognized and untreated, the condition becomes more severe and unconsciousness may result.

3. The diabetic should also know the

late symptoms of diabetic coma. They are:

a. Extreme loss of appetite.

b. Nausea and vomiting.

c. Abdominal pain.

d. Extreme fatigue and weakness.

e. Sweet "fruity" odor of the breath.

f. "Air hunger."

g. Increased sleepiness.

h. Coma, unconsciousness.

4. Laboratory tests will confirm the presence of diabetic coma (acidosis).

Indications are:

a. Excessively high blood sugar.

b. A quantity of sugar in the urine.

c. Acetone and diacetic acid in the urine.

d. Lowered carbon dioxide combining power of the blood.

D. Patients should take action when symptoms of diabetic coma appear:

1. When early symptoms appear:

a. The patient should recognize these symptoms, take his insulin, and notify his doctor without delay.

b. The doctor will be able to prescribe the necessary treatment to bring the diabetes under control.

2. When late symptoms or danger signs occur an emergency exists:

a. The doctor should be called immediately so that emergency treatment can be given as soon as possible.

b. Insulin should be given as prescribed by the doctor, even though the patient has been unable to eat.

c. The urine should be tested as often as the patient voids. This will help the doctor when he prescribes treatment.

d. Nourishment in the form of liquids such as broth, fruit juice, milk, or gruel may be given to the patient.

e. The family should prepare to take the patient to a hospital, since most doctors prefer to treat patients with late symptoms of coma in a hospital.

E. Diabetic coma can be prevented by keeping diabetes under control.

1. The kind and amount of insulin prescribed should be taken.
2. The kinds and amounts of food allowed on the meal plan should always be eaten.
3. The urine should be tested for sugar every day. Diabetic coma seldom occurs if the urine is kept sugar free.
4. If the urine tests show over a one plus reaction for sugar in the urine, the patient should check his food and insulin.
 - a. The patient may be eating or drinking more than he is allowed on his meal plan.
 - b. The patient may be using the wrong kind or the wrong amount of insulin.
 - c. The patient should see his doctor if he has been following the instructions for his food and insulin. The prescription of food and insulin may need to be changed.
5. The patient should visit his doctor regularly, and as often as the doctor advises. These visits will enable the doctor and the patient to keep the diabetes under control.
6. Any infection or illness may cause diabetic coma.
 - a. The patient should see his doctor promptly for the treatment of any infection or illness.
 - b. He should keep up his resistance to infection or illness by getting enough rest and sleep each day to avoid becoming over-tired.
 - c. Close contact with persons who have colds or contagious diseases should be avoided.

F. Insulin reactions and diabetic coma may seem alike in some respects.

1. Both insulin reaction and diabetic coma are conditions in which the diabetes is out of control.
2. Unconsciousness is the most serious sign of both insulin reaction and diabetic coma. Because of this, when a patient with diabetes is found unconscious, it should be determined beyond doubt which

state of uncontrolled diabetes is present before treatment is attempted.

G. The symptoms of insulin reaction and the symptoms leading to diabetic coma are different in most cases.

1. In insulin reaction:
 - a. The onset is rather sudden. It may be a matter of minutes.
 - b. The patient's skin is moist or sweaty. His breathing is normal.
 - c. The laboratory tests show a low blood sugar and no sugar in the urine.
2. In diabetic coma:
 - a. The onset is slow, usually over a period of days.
 - b. The patient's skin is dry. He has "air hunger" or deep and labored breathing. His breath may have a "fruity" odor (like bananas or grapes).
 - c. The laboratory tests show a high blood sugar and a large amount of sugar as well as diacetic acid in the urine.
3. If there is doubt as to whether insulin reaction or diabetic coma is present, the case should always be treated as an insulin reaction and some form of carbohydrate should be given. The carbohydrate will help the insulin reaction, and not greatly influence the diabetic coma.

III. SUGGESTED FOLLOW-UP ACTIVITIES FOR THE GROUP

A. In a group discussion, find out whether some of the patients have ever had a diabetic coma. If so, ask them to relate some of their experiences with it. Try to direct the conversation to include causes, onset of symptoms, treatment, and how it could have been prevented.

B. Discuss the advisability of patients having identification cards with them at all times.

IV. TYPICAL QUESTIONS PATIENTS ASK

A. *How can a person tell when he is going into diabetic coma?*

B. How long does it take for a person to develop diabetic coma?

C. Is an insulin reaction the same thing as a diabetic coma?

D. Does it do any harm to a person to have a diabetic coma?

E. If a person becomes unconscious, is it always due to diabetic coma?

F. Should a person with diabetes always be given sugar or something sweet when he is unconscious?

G. Should all people with diabetes always carry identification cards with them?

H. Should I test my urine more often if the results show a red test?

I. What should I do if I don't feel well and my urine test shows a red result?

J. Are diabetics who do not have to take insulin less likely to develop diabetic coma?

K. Is it all right to use medicines like cough syrup when I have a cold?

L. When I'm sick and don't feel like eating, should I stop taking my insulin?

M. Why are boils and carbuncles so hard to heal in the diabetic?

N. Why is it necessary to send a patient in a diabetic coma to a hospital?

Part 10

CARE OF THE FEET

I. PURPOSE OF THE FILM

A. To show why the diabetic patient should take proper care of his feet, and to present effective methods for doing so.

B. To illustrate how serious difficulties from poor circulation, accidents, injuries, and infections can be prevented.

C. To demonstrate how to select proper fitting shoes and socks.

D. To stress the value of exercise as an aid in maintaining good blood circulation and health of the feet.

II. IDEAS SUGGESTED BY THE FILM

A. D.

c. The supply of heat from the blood is cut down so that patients are more likely to have cold feet.

d. Serious trouble like ulcers, gangrene, and infections develop more easily.

e. The healing process is slowed down.

3. Diabetics often have serious trouble with their feet because of poor circulation.

B. Good circulation is necessary for healthy feet.

1. Both outdoor and indoor exercise, with enough rest and sleep, help maintain good circulation.

2. The patient should avoid doing anything that might further decrease the flow of blood. Crossing the legs while seated and wearing tight garters, shoes, or socks are examples of what to avoid.

C. Common foot problems occurring in diabetics require special care.

1. People who have discomfort from corns, calluses, or bunions should seek their doctors' advice for treatment.

a. Corns and calluses are areas of thickened skin caused by pressure and

rubbing. They may be painful and uncomfortable.

b. Corn remedies contain strong medicines that burn away the skin. The use of corn remedies is not advised for diabetics because their skin is more sensitive, and more apt to be burned.

c. The best way to get rid of corns and calluses is to relieve the pressure and rubbing by wearing shoes and stockings that fit properly.

2. Infections around the toenails (especially the big toe) can cause serious trouble.

a. Toenails may grow inward because of pressure. Ingrown toenails irritate the skin so that it may become infected.

b. The pressure on the toenail may be caused by wearing socks or stockings too short in length, having toenails that are too long, or wearing shoes that are poorly fitted.

3. Ulcers of the feet and legs may develop after an injury or bruise.

a. If the circulation of the feet and legs is poor, the injured skin may die from lack of blood and an ulcer (an open sore) may form.

b. Poor circulation of blood brings only a small amount of nourishment to an injured or bruised area, so that healing is a slow process.

c. When a diabetic has a bruise or injury, it is especially important for him to see his doctor for treatment.

4. Skin infections of the feet, such as "athlete's foot," occur readily.

a. Persons with diabetes have a lowered resistance to infections, so they develop skin infections more quickly than do most people.

b. Dirty and moist feet provide favorable conditions for germs to grow, and "athlete's foot" may follow.

c. When the skin is kept clean and dry, many skin infections can be prevented.

D. Gangrene is an area of dead flesh which

sometimes develops in patients who neglect bruises, injuries, or infections.

1. There are different causes of gangrene.

a. Infections, injuries, or bruises lacking a proper blood supply may cause gangrene.

b. When the supply of blood is cut down, the skin lacks proper nourishment and may die.

c. Frostbite and burns injure the skin so that gangrene may develop.

d. Allowing diabetes to get out of control is often a contributing cause to the development of gangrene.

2. Gangrene usually can be prevented by observing the following precautions:

a. Keeping the diabetes under control.

b. Preventing infections, bruises, and other injuries.

c. Improving circulation of the blood to the extremities.

d. Taking good care of small cuts and injuries.

e. Giving proper care to the feet.

E. First aid for all cuts or injuries is important for the person with diabetes.

1. Prevention of infection is one of the main reasons for treating cuts and injuries.

2. Cleanliness will help prevent infection.

3. A bleeding wound cleans itself, but the skin around the wound should be made clean. This can be done by using mild soap and warm water.

4. When a cut occurs, the skin is already injured. Strong medicine or antiseptic that will cause more damage to the skin should be avoided.

5. Alcohol should be applied after cleaning the skin, and the wound should be covered with sterile gauze.

6. Pressure will help to stop bleeding. Bleeding can be stopped by pressing down on the skin at a point between the wound and the heart.

7. It is important for diabetics to go to

their doctors even for minor cuts or injuries.

F. Cleanliness and proper care of the toenails are two important factors in taking care of the feet.

1. Cleanliness is important for the prevention of infection.

a. The feet should be washed thoroughly every day with warm water and soap.

b. Areas between the toes should be cleaned and dried gently, so as not to break the skin.

c. A clean towel should be used to pat the skin dry.

d. A small piece of cotton twisted on the end of an orangewood stick can be used for cleaning around and under the toenails without breaking the skin.

2. Trimming the toenails properly will prevent irritation and injury to the skin.

a. To protect the skin, the length of the toenails should be just even with the ends of the toes.

b. Trimming the toenails straight across will help prevent ingrown toenails.

c. The nails will be easier to trim when they have been softened by washing.

d. If patients have difficulty reaching their toes, or if their hands tremble, it is advisable for someone to trim their toenails for them.

G. Patients should know how to keep the skin of the feet in good condition.

1. The feet should be inspected regularly for any injuries, bruises, or unusual skin conditions.

2. For skin that is rough and dry, a skin cream containing lanolin should be used. This will soften the skin and prevent cracks. The skin is usually soft between the toes, so cream is not necessary in these areas.

3. For skin that is moist, soft and tender, rubbing alcohol should be used on

the feet and between the toes. This will help to toughen the skin.

4. Talcum powder can be sprinkled on the feet, especially between the toes, to help keep them dry.

5. If there are any corns or calluses, a razor should not be used to cut them. A sandpaper board (emery board) can be used to rub them down gently.

H. Certain general points should be considered in selecting shoes and stockings or socks.

1. Shoes and stockings or socks are worn to protect the feet, and are important in keeping the feet in good condition.

2. They should fit so that no sore spots develop from pressure or rubbing.

3. Shoes and stockings or socks should also fit so that the flow of blood will not be slowed down.

4. Stockings or socks should be about $\frac{1}{2}$ inch longer than the ends of the toes.

5. Women's stockings should be held up by supporters attached to a belt or girdle. Round garters may interfere with circulation.

6. Tight elastic on men's socks or tight garters might cut down the circulation.

7. Measurement for new shoes should be made when the person is standing in order to allow for normal foot spread.

8. Shoes made of soft leather are usually more comfortable than those made of hard leather.

9. There should be enough room to wiggle the toes in the ends of a shoe.

10. Shoes should be tested by walking in them and by raising up on the toes. There should be no pinching or pressure.

11. The heel of the shoe should be tested to see that it fits snugly without slipping.

12. The height and width of the heel of the shoe should help to distribute the weight of the body evenly on the feet.

13. New shoes should be broken in gradually.

I. Exercise improves the blood circulation and keeps the feet healthy.

1. Outdoor exercise is helpful in keeping the muscles in good condition, and in maintaining a good flow of blood to the feet.

2. Other exercises to improve circulation, such as the Buerger-Allen exercises, are beneficial. The Buerger-Allen exercises are taken as follows:

a. The patient lies flat on his back on the bed and raises his legs up for one minute. This helps take blood away from the feet.

b. The patient sits up on the edge of the bed and lets his legs hang down for one minute. While his legs are hanging down, the patient wiggles his toes and moves his feet up, down, and around. This helps to bring a fresh supply of blood to the feet.

c. The patient again lies flat on the bed, and rests for one minute.

d. He then repeats steps a, b, and c about five times.

3. Exercise is helpful to improve the circulation, but the diabetic patient should always have the approval of his physician for the type and amount of exercise he takes.

III. SUGGESTED FOLLOW-UP ACTIVITIES FOR THE GROUP

A. Arrangements can be made to have a foot inspection of members of the class. Some patients may need individual attention or referral to their physicians for treatment.

B. The proper daily care for feet can be demonstrated by actually washing, drying, caring for the skin, trimming the nails, and caring for corns in the classroom.

C. The Buerger-Allen exercises might be demonstrated for the group.

IV. TYPICAL QUESTIONS PATIENTS ASK

A. *Is it all right to soak my feet in HOT water instead of washing them with luke-warm water?*

B. *What about soaking feet in epsom salts?*

C. *Sometimes I get pains in my legs. Is it because my diet lacks something, or because my diabetes is getting out of control?*

D. *What can be done with new shoes to prevent them from hurting?*

E. *My toes overlap so that I have a very sore spot. What can I do about it?*

F. *What can be done for cold feet?*

G. *What causes poor circulation in the feet?*

H. *How can I tell when the circulation in my feet is bad?*

I. *Is it all right to use a hot water bottle to warm my feet?*

J. *What makes the skin of my feet seem so tough?*

K. *Why should one cut his toenails straight across?*

L. *How should a blister on the heel be treated?*

M. *I have trouble cutting my toenails because they are thick and hard. Is there any way in which cutting them can be made easier?*

N. *What is lanolin?*

O. *Do corns have seeds and roots?*

P. *How can I get rid of corns and calluses?*

Q. *Is Mercurochrome all right to use on cuts and bruises?*

R. *Should I use any special kind of alcohol to rub on my feet?*

S. *Why do so many people with diabetes have to have a foot cut off?*

T. *Do all people with diabetes get gangrene?*

U. *Is it true that many diabetics get infections in their feet or legs, and sometimes lose their limbs?*

Part II

SELECTING MEALS FOR ALL OCCASIONS

I. PURPOSE OF THE FILM

A. To show how the meal plan and exchange lists help in selecting meals when the patient is ill, taking lunch to work, going on a picnic, eating at a friend's house, and eating in a restaurant.

B. To suggest different ways to use certain basic foods like meat, fruit, and milk to provide more variety in food selection.

II. IDEAS SUGGESTED BY THE FILM

A. The meal plan and exchange lists serve as the basis for selecting meals.

1. It is important for the patient to follow his meal plan at all times to help in keeping his diabetes under control.

2. The exchange lists show a variety of foods that may be selected for different meals.

3. It is possible for the patient to arrange his meals so that he can carry his lunch to work, go on a picnic, eat in a restaurant, or eat at a friend's house.

B. The person with diabetes should eat all of the foods on his meal plan when he is sick, just as he does when he is well.

1. When a person is ill food is needed to fight the illness, as well as to supply the body with energy necessary for daily living.

2. When a patient takes insulin and misses his meals, he is likely to have an insulin reaction.

3. When insufficient food is eaten, the body has to burn its own tissue. The process of burning body tissue is likely to cause acidosis if it is allowed to continue.

C. When a person is ill, he may prefer soft or liquid foods.

1. Cereal and cream may take the place of bread and butter.

2. Eggnog can be made by using the milk and meat exchanges allowed in the meal plan. Nutmeg, vanilla, and saccharin, if desired, may be used for flavoring.

3. Fruit may be taken in the form of fruit juice, and counted as the serving of fruit in the meal plan.

4. Vegetables may be taken as juice or added to broth for soup.

5. Plain broth or consomme may be taken at any time. The meat, vegetable, and bread exchanges can be added to broth to make soup. Soup also can be prepared by combining milk and other foods on the meal plan.

6. The bedtime snack may consist of crackers and milk, milk toast, or cereal and milk.

7. Liquids prepared without cream or sugar such as coffee, tea, or lemonade may be taken at any time.

D. A person with diabetes may take a lunch to work.

1. A sandwich may be prepared by using the bread, meat, and fat exchanges allowed for that meal.

2. The milk may be used as a beverage, or it may be added to tea or coffee.

3. Whole fruit such as a small apple or an orange is easy to pack in a lunch.

4. When vegetables such as tomato and lettuce are desired for a sandwich, it is advisable to wrap them in wax paper separate from the sandwich. This will keep them crisp and avoid making the sandwich soggy.

E. Picnic meals can be planned to include foods suitable for persons with diabetes.

1. The meal plan allows the patient to eat many of the same foods that the family enjoys.
2. Frankfurters ("hot dogs") and deviled eggs can be used as meat exchanges.
3. Foods like corn, baked beans, bread, and rolls count as bread exchanges. A small frankfurt roll is about equal to one slice of bread.
4. Fruit can be used for dessert.
5. If black coffee, tea, or lemonade are made without sugar, they can be taken as a beverage.

F. Restaurants and cafeterias usually offer a sufficient variety of foods from which the person with diabetes may select a meal according to his meal plan.

1. Most of the foods on a meal plan can be found on a restaurant menu by careful use of the exchange lists.
2. It is advisable to avoid fried foods and mixed dishes in restaurants because they usually contain varying amounts of fat, flour, and sugar which are difficult to calculate.

G. Occasional variations may be made in the meal plan.

1. The doctor or dietitian may need to adjust the meal plan from time to time as changes occur in the patient's condition, work, and activity.
2. Most of the foods on the meal plan should be taken as listed, although small amounts may be saved to eat between meals.
3. Some of the meat and fat exchanges may be taken from one meal and added to another. However, foods from the other exchange lists should not be saved from one meal to another.

H. The exchanges allowed on the meal plan may be combined to prepare mixed dishes at home.

1. The meat exchanges can be used with vegetables like peas, carrots and onions,

and with bread exchanges like potatoes or parsnips to make an unthickened stew or soup.

2. The meat, bread, and fat exchanges such as hamburger, cheese, macaroni, and butter, may be combined with tomatoes to make Italian spaghetti or goulash.

3. Egg salad can be prepared by using the meat and fat exchanges together with diced celery and sour pickles.

4. Different fruits can be combined to make a fruit cup or a salad.

III. SUGGESTED FOLLOW-UP ACTIVITIES FOR THE GROUP

A. Have class members bring in restaurant menus. In small working groups have the members select a meal that some member of their group could eat if he went out to dinner.

B. Let each member of the group plan some menus that he could use for a picnic or for a lunch to take to work.

IV. TYPICAL QUESTIONS PATIENTS ASK

A. *Is it all right to skip meals when I don't feel like eating?*

B. *Should I eat less food on Sunday when I don't have to go to work?*

C. *What can I eat on holidays like Thanksgiving and Christmas?*

D. *How can I make eggnog for the holidays?*

E. *Is it a good idea to drink a lot of fruit juice when I have a cold?*

F. *Are canned soups included in the exchange lists?*

G. *Do bouillon cubes contain much food value?*

H. *Can I have roast corn on a picnic?*

I. *What are some different kinds of cold drinks I can have in the summertime?*

J. *Do alcoholic beverages have any calories?*

K. *Can I arrange my meals to have beer once in a while?*

L. *Is stew a good food to select at the restaurant?*

M. *Does jello have sugar in it?*

N. *What is good to eat between meals when I get very hungry?*

O. *Is it all right to save food from one meal to have at another?*

P. *How can I arrange my foods to have spaghetti and meat balls?*

Q. *Will I always have the same diet?*

R. *Is it possible to arrange my meals to have more milk to drink?*

S. *I don't like milk. Do I always have to drink it?*

T. *How often may I have ice cream?*

SECTION IV

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